

What is claimed is:

1. A graphics apparatus for rendering a scene including an object having more than one representation, each representation having a corresponding level of detail, the apparatus comprising:  
5 a rendering system that computes a first point of intersection between an appropriate one of the representations of the object and a ray corresponding to a view of the scene, and a second point of intersection between an alternate one of the representations of the object and a further projection of the ray.

10 2. A graphics apparatus according to claim 1, wherein the rendering system further determines first and second colors respectively associated with the first and second points of intersection.

15 3. A graphics apparatus according to claim 2, wherein the rendering system further blends the first and second colors to provide a combined color for a pixel corresponding to the ray.

4. A graphics apparatus according to claim 3, wherein the rendering system blends the first and second colors in accordance with first and second weights respectively associated with the appropriate and alternate representations.

5. A graphics apparatus according to claim 1, wherein the rendering system selects the appropriate and alternate representations from among the more than one representation.

6. A graphics apparatus according to claim 5, wherein the rendering system selects the  
5 representations in accordance with a perceived size of the object in the scene.

7. A graphics apparatus, comprising:

a scene server for identifying an appropriate representation of an object among more than one representation of the object, each representation having a corresponding level of detail; and

10 a ray tracer coupled to the scene server that computes a first point of intersection between the appropriate representation of the object and a ray corresponding to a view of a scene including the object, and a second point of intersection between an alternate one of the more than one representations and a further projection of the ray.

15 8. A graphics apparatus according to claim 7, further comprising a shader that determines a respective color associated with the first and second points of intersection.

9. A graphics apparatus according to claim 7, wherein weights are respectively associated with the appropriate and alternate representations.

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10. A graphics apparatus according to claim 9, wherein weights are respectively associated with the appropriate and alternate representations, the shader further determining a final color based on the respective colors and the respective weights.

5           11. A graphics apparatus according to claim 7, wherein the ray tracer generates a ray tree based on the first point of intersection and a sibling ray tree based on the second point of intersection.

10           12. A graphics apparatus according to claim 8, wherein the ray tracer generates a ray tree based on the first point of intersection and a sibling ray tree based on the second point of intersection.

13. A graphics apparatus according to claim 7, wherein the ray is a camera ray.

15           14. A graphics apparatus according to claim 8, wherein the ray is a camera ray.

15. A graphics apparatus according to claim 7, wherein the ray is a shadow ray.

16. A graphics apparatus according to claim 8, wherein the ray is a shadow ray.

17. A graphics apparatus according to claim 7, wherein the ray is one of a refracted ray and a reflected ray.

18. A graphics apparatus according to claim 8, wherein the ray is one of a refracted ray  
5 and a reflected ray.

19. A graphics apparatus, comprising:

means for identifying an appropriate representation of an object among more than one representation of the object, each representation having a corresponding level of detail; and

10 means for computing a first point of intersection between the appropriate representation of the object and a ray corresponding to a view of a scene including the object, and a second point of intersection between an alternate one of the more than one representations and a further projection of the ray.

15 20. A graphics apparatus according to claim 19, further comprising means for determining a respective color associated with the first and second points of intersection.

21. A graphics apparatus according to claim 19, further comprising means for respectively associating weights with the appropriate and alternate representations.

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22. A graphics apparatus according to claim 20, further comprising means for respectively associating weights with the appropriate and alternate representations, the determining means including means for further determining a final color based on the respective colors and the respective weights.

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23. A graphics apparatus according to claim 19, further comprising means for generating a ray tree based on the first point of intersection and a sibling ray tree based on the second point of intersection.

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24. A graphics apparatus according to claim 20, further comprising means for generating a ray tree based on the first point of intersection and a sibling ray tree based on the second point of intersection.

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25. A graphics apparatus according to claim 19, wherein the ray is a camera ray.

26. A graphics apparatus according to claim 20, wherein the ray is a camera ray.

27. A graphics apparatus according to claim 19, wherein the ray is a shadow ray.

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28. A graphics apparatus according to claim 20, wherein the ray is a shadow ray.

29. A graphics apparatus according to claim 19, wherein the ray is one of a refracted ray and a reflected ray.

30. A graphics apparatus according to claim 20, wherein the ray is one of a refracted ray  
5 and a reflected ray.

31. A graphics method, comprising:

identifying an appropriate representation of an object among more than one representation of the object, each representation having a corresponding level of detail; and

10 computing a first point of intersection between the appropriate representation of the object and a ray corresponding to a view of a scene including the object, and a second point of intersection between an alternate one of the more than one representations and a further projection of the ray.

15 32. A graphics method according to claim 31, further comprising determining a respective color associated with the first and second points of intersection.

33. A graphics method according to claim 31, further comprising respectively associating weights with the appropriate and alternate representations.

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34. A graphics method according to claim 32, further comprising respectively associating weights with the appropriate and alternate representations, the determining step including determining a final color based on the respective colors and the respective weights.

5           35. A graphics method according to claim 31, further comprising generating a ray tree based on the first point of intersection and a sibling ray tree based on the second point of intersection.

10           36. A graphics method according to claim 32, further comprising generating a ray tree based on the first point of intersection and a sibling ray tree based on the second point of intersection.

37. A graphics method according to claim 31, wherein the ray is a camera ray.

15           38. A graphics method according to claim 32, wherein the ray is a camera ray.

39. A graphics method according to claim 31, wherein the ray is a shadow ray.

40. A graphics method according to claim 32, wherein the ray is a shadow ray.

BEL-013

41. A graphics method according to claim 31, wherein the ray is one of a refracted ray and a reflected ray.

42. A graphics method according to claim 32, wherein the ray is one of a refracted ray  
5 and a reflected ray.

43. A graphics method according to claim 31, wherein the identifying step includes:  
determining a perceived size of the object;  
comparing the perceived size with a value corresponding to the perceived size  
10 respectively associated with each representation; and  
identifying the appropriate and alternate representations in accordance with a  
result of the comparing step.

44. A graphics method according to claim 43, further comprising respectively  
15 associating weights with the appropriate and alternate representations in accordance with the  
result of the comparing step.

45. A graphics method according to claim 44, further comprising determining a  
respective color associated with the first and second points of intersection and the respective  
20 weights.